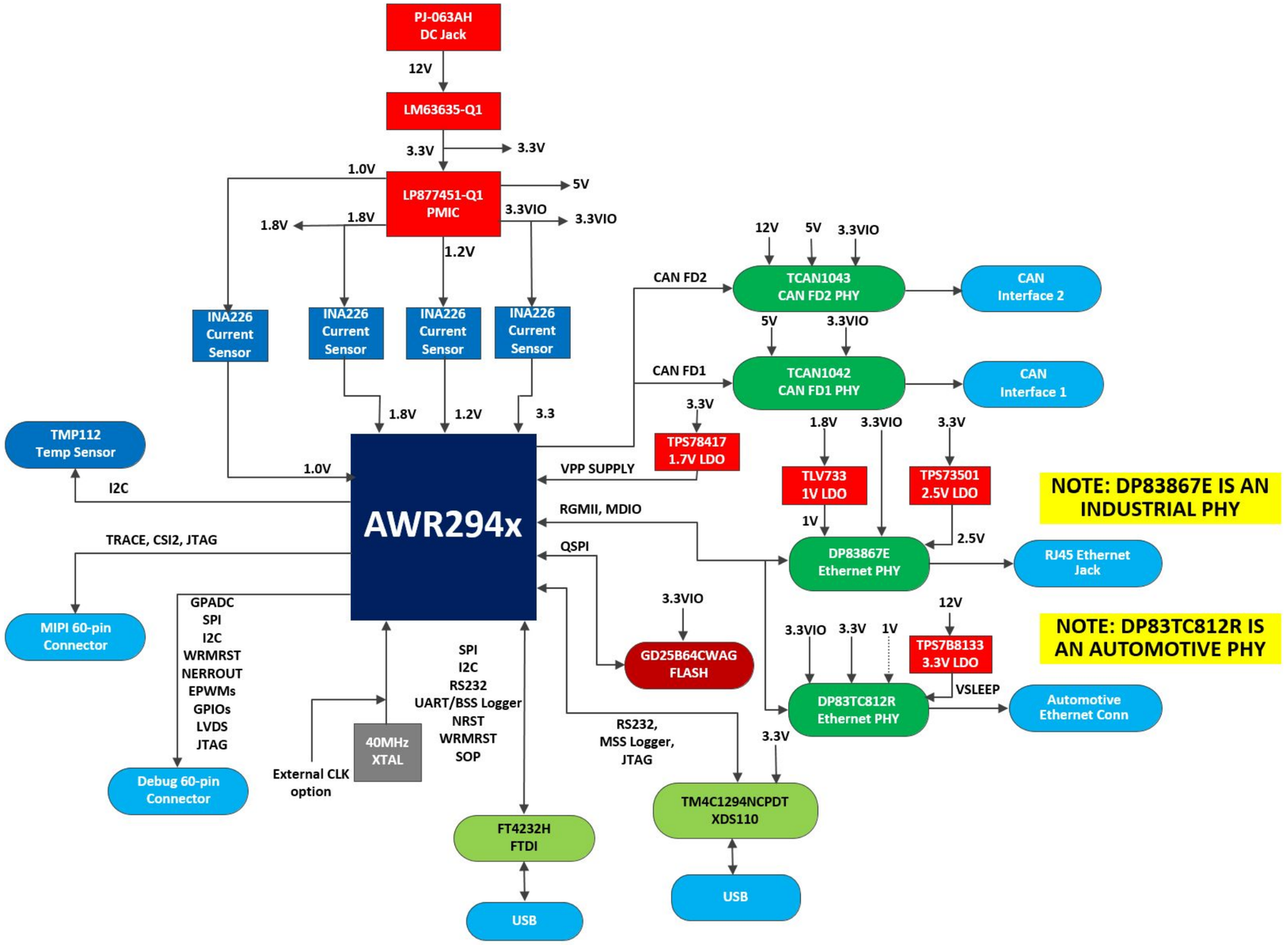
BLOCK DIAGRAM



Revision History

Rev	ECN #	Approved Date	Approved by	Notes
REV B	01	16-04-2021		Implemented PMIC review comments from TI
REV B	02	20-04-2021		Implemented Automotive Ethernet review comments from TI
REV B	03	20-05-2021		Updated assembly property of R196 to Fitted. Updated assembly property of R371 & R379 to Not Fitted.
REV B	04	21-05-2021		BSS_UARTA_TX signal is removed from XDS110 and connected to C port of FTDI Updated assembly property of R160 & R164 to Not Fitted. Updated assembly property of R131 to Fitted.
REV B	05	25-05-2021		Part number of R265, R270, R275, R281 and C167 changed Added 0 ohm resistors in the LVDS path Optionl path for LVDS data lanes TX2 and TX3 added
REV B	06	03-06-2021		Auto Ethernet ESD Diodes (D18, D19) part number changed to TPD1E05
REV B	07	07-06-2021		10uF decap (C110) moved to 1V8_CLK supply from 1V8_VCO supply
REV B	08	14-06-2021		0 ohm resistor (R72) added in J19.13
REV B	09	16-06-2021		R20.2 net name changed to 1V0_RF2
REV B	10	17-06-2021		Updated assembly property of R244 to Not Fitted
REV B	11	21-06-2021		Removed snubber circuits from the PMIC Added provision for LC filter on 1.0V and 1.8V supplies Combined 1V0_RF1 & 1V0_RF2 into a single 1V0 supply and removed one of the current sensor
REV B	12	22-06-2021		GPADC2 input changed to 1V2.
REV B	13	23-06-2021		Updated assembly property of C179, C181, J1, J5, C127, R71, R20, C55 & J4 Removed C122 and C143. Added provision for 10uF cap on VDDA supply R259 changed to BLM18KG601SH1. C154 & C182 replaced with 0.01uF cap
REV B	14	24-06-2021		AWR 3.3V supply changed to pre-regulator output by default (REGOUT_3V3) Added resistor option to take AWR 3.3V supply from Chariot VIO
REV B	15	06-07-2021		Updated R331 and R332 to 1k ohm resistor Updated R347, R262, R261, R263 to 510 ohm resistor VDDIO supply of Auto Ethernet PHY (U4.34) changed to 3V3_VIO Populated R116 by default and R199 changed to DNI
REV B	16	09-07-2021		FB1 changed to BLM18AG102SH1D
REV B	17	13-07-2021		Updated assembly property of C7, R14, R291, R67 & R70
REV B	18	16-07-2021		Block diagram updated
REV B	19	17-09-2021		R13 & R17 are made mountable to control CAN STB from PMIC INT
REV C	20	19-04-2022		Added L10 Inductor(4.7uH) at PMIC Input
REV D	21	29-06-2022		Added R200, L10, C143, C199, C200, C201, C202, R210 Changed PMIC Enable Pullup, VCCA and Boost input supply to PVIN3V3
REV D	22	17-01-2023		Updated C106 & C108 to 3.9pF R6 & R8 are made DNP and R7 as mountable

TABLE OF CONTENTS

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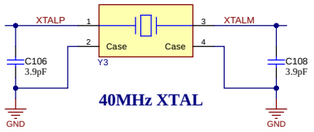
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 1 of 25
Drawn By:	File: PROC113D_CoverSheet.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

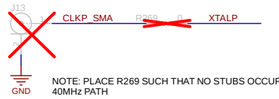
Texas Instruments
http://www.ti.com

xWR2944 IO REFERENCE

40MHZ CLOCK SOURCES

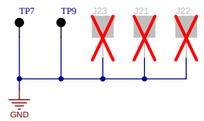


40MHz XTAL



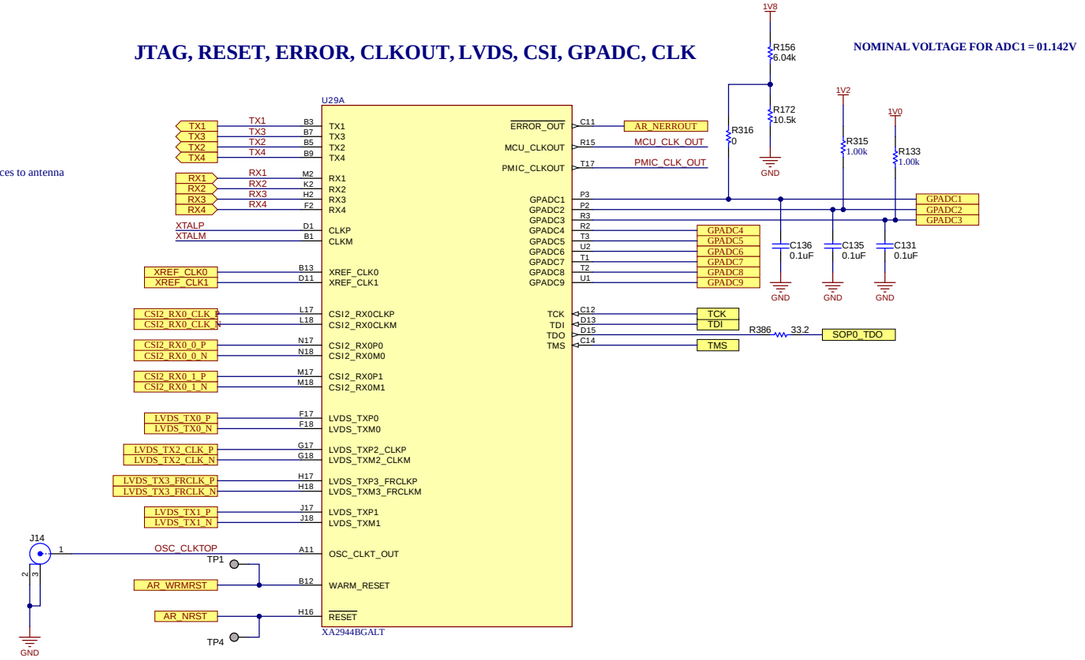
NOTE: PLACE R269 SUCH THAT NO STUBS OCCUR ON 40MHz PATH

GND TEST POINTS



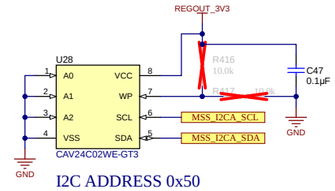
JTAG, RESET, ERROR, CLKOUT, LVDS, CSI, GPADC, CLK

50 ohm GCPW traces to antenna



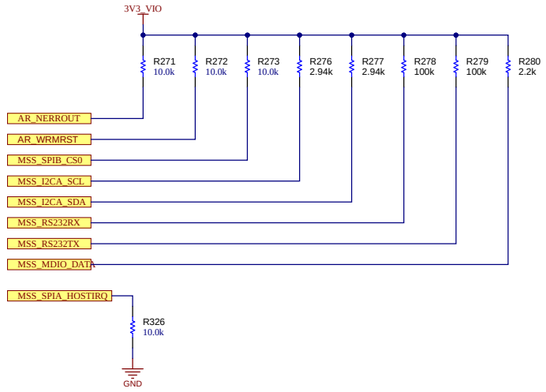
NOMINAL VOLTAGE FOR ADC1 = 01.142V

BOARD ID EEPROM

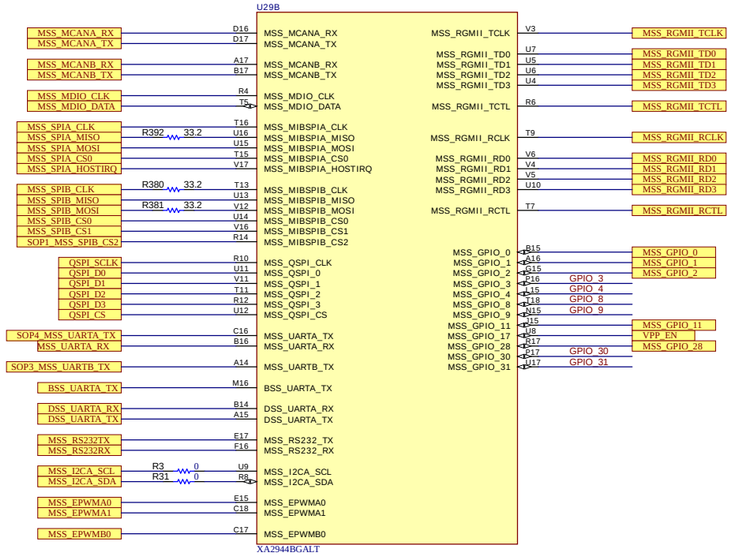


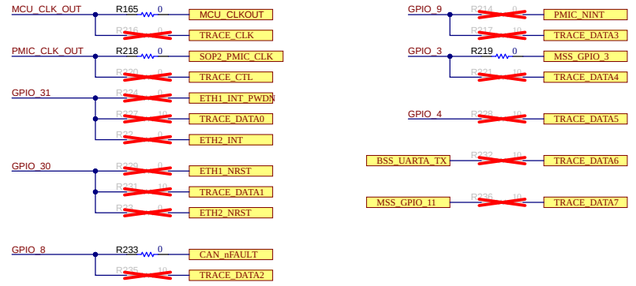
I2C ADDRESS 0x50

PULLUPS/DOWNS



CAN, MDIO, SPI, QSPI, UART, EPWM, RGMII, GPIO





Orderable: xWR2944EVM	Designed for: Public Release	Mod. Date: 1/17/2023
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Drawn By:	File: PROC113D_IO_Reference.SchDoc	Size: A2
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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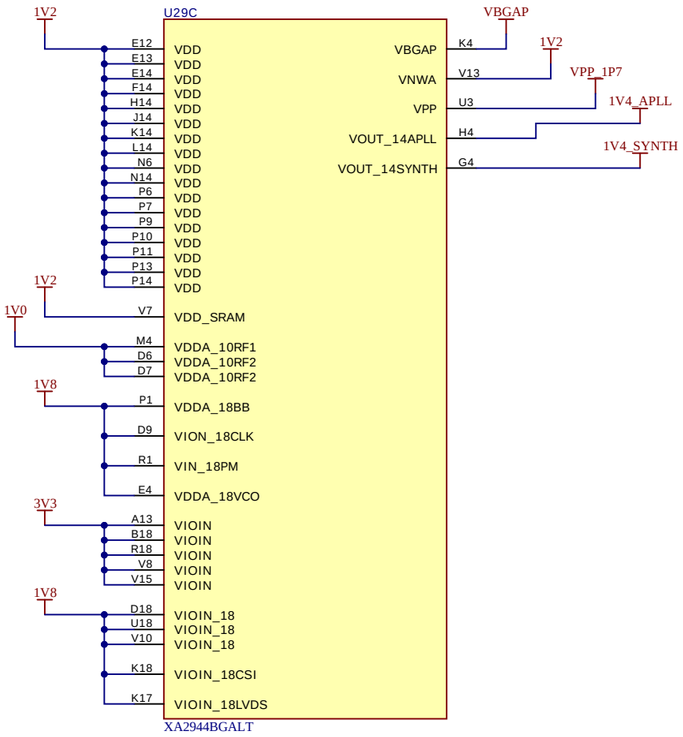
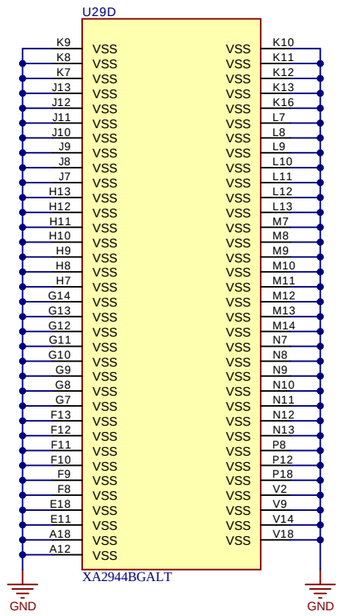
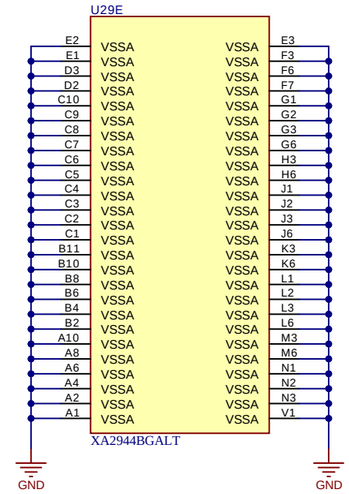
xWR2944 POWER REFERENCE







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Drawn By:	File: PROC113D_PWR_Reference.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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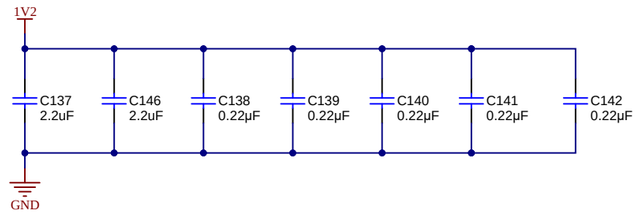
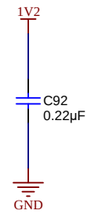
DECOUPLING REFERENCE

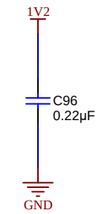
1.2V DIGITAL SUPPLY

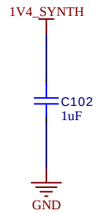


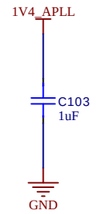
SRAM SUPPLY



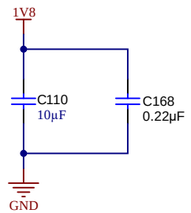
VNWA SUPPLY



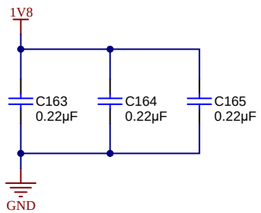




1.8V CLOCK SUPPLY



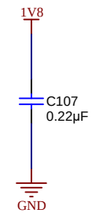
1.8V IO SUPPLY



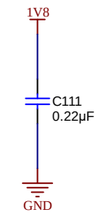
1.8V LVDS SUPPLY

1.8V CSI SUPPLY

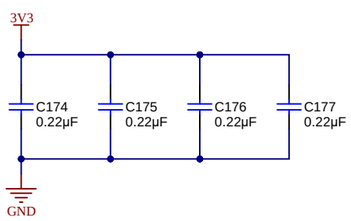
1.8V PM SUPPLY



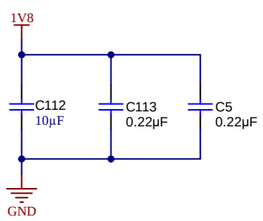
1.8V VCO SUPPLY



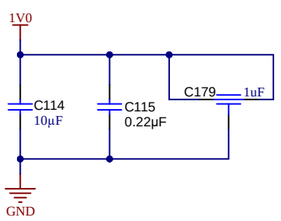
3.3V IO SUPPLY



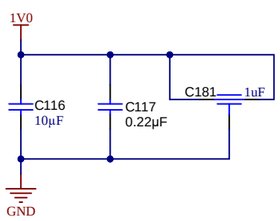
1.8V BB SUPPLY



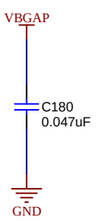
RF1 SUPPLY



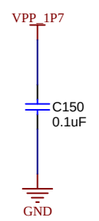
RF2 SUPPLY



BANDGAP SUPPLY



VPP SUPPLY



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Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

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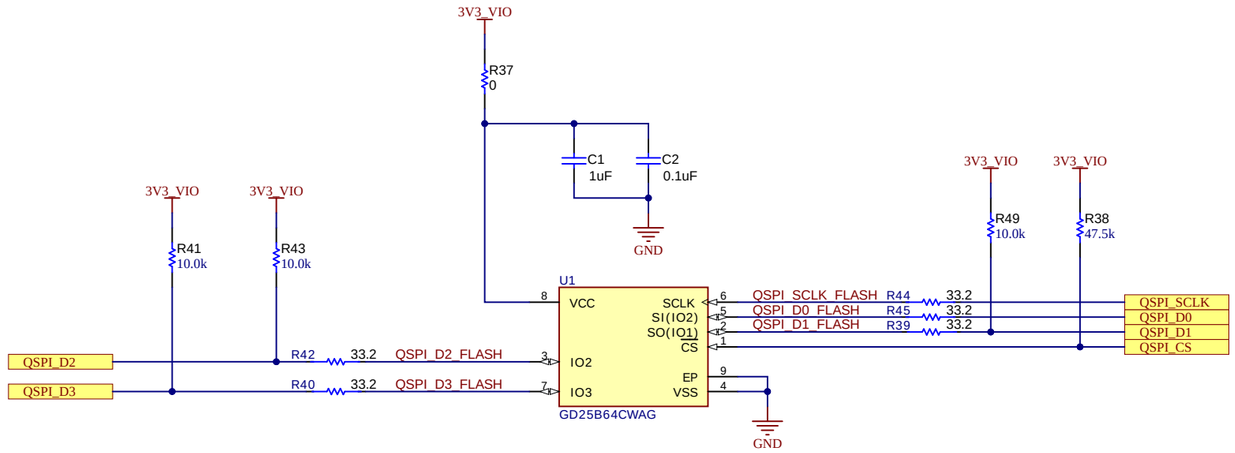
References

GD25B64CWAG Datasheet

QSPI FLASH REFERENCE



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Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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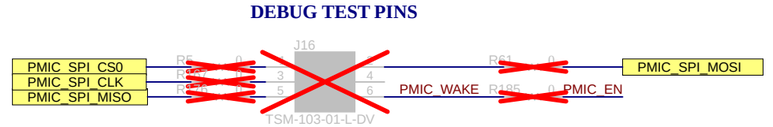
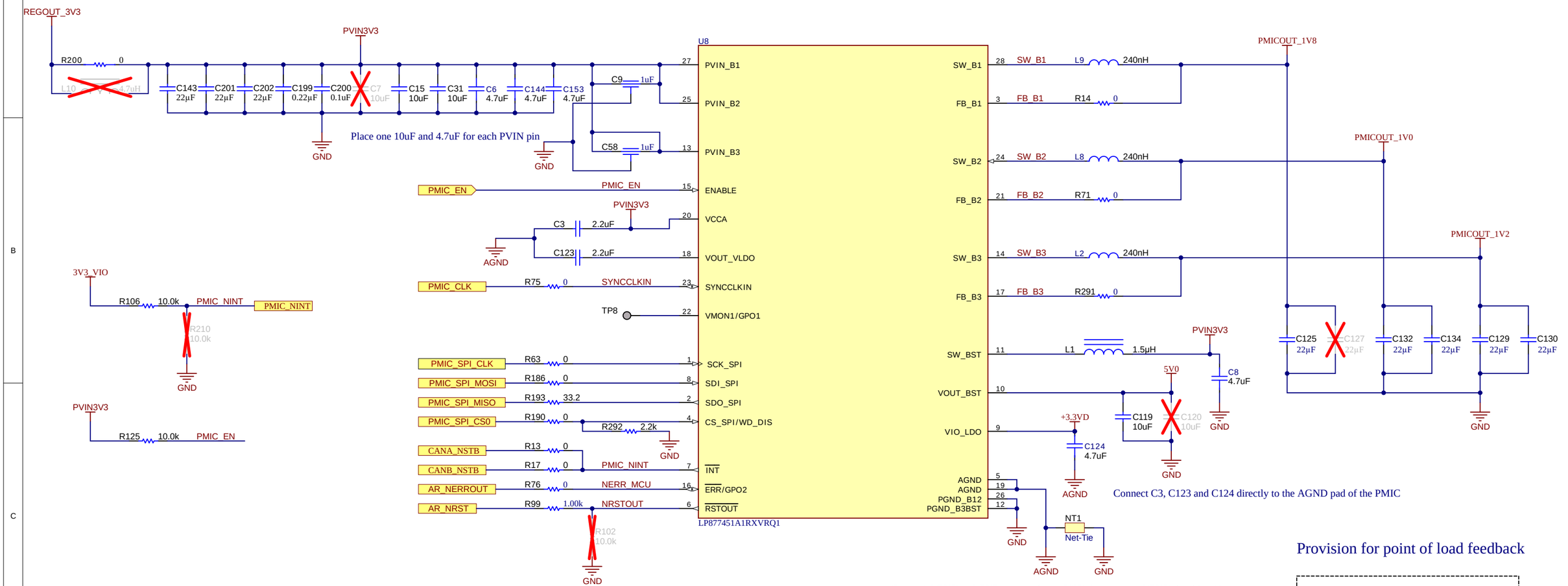
http://www.ti.com

References

PMIC REFERENCE

DEBUG TEST PINS

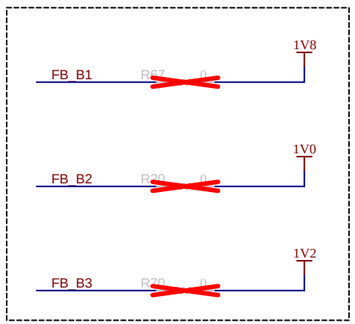




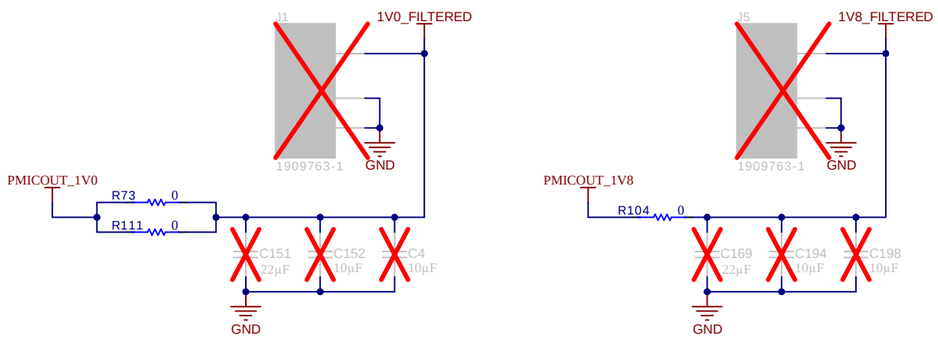
Connect C3, C123 and C124 directly to the AGND pad of the PMIC

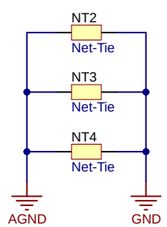
Connect AGND to PGND in inner layer GND. In any case, PGND should not be connected to power pad on layer on which PMIC is placed

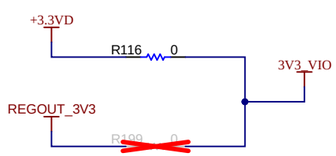
Provision for point of load feedback



PMIC LC FILTER







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Drawn By:		File: PROC113D_PMIC_Reference.SchDoc	Size: B
Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

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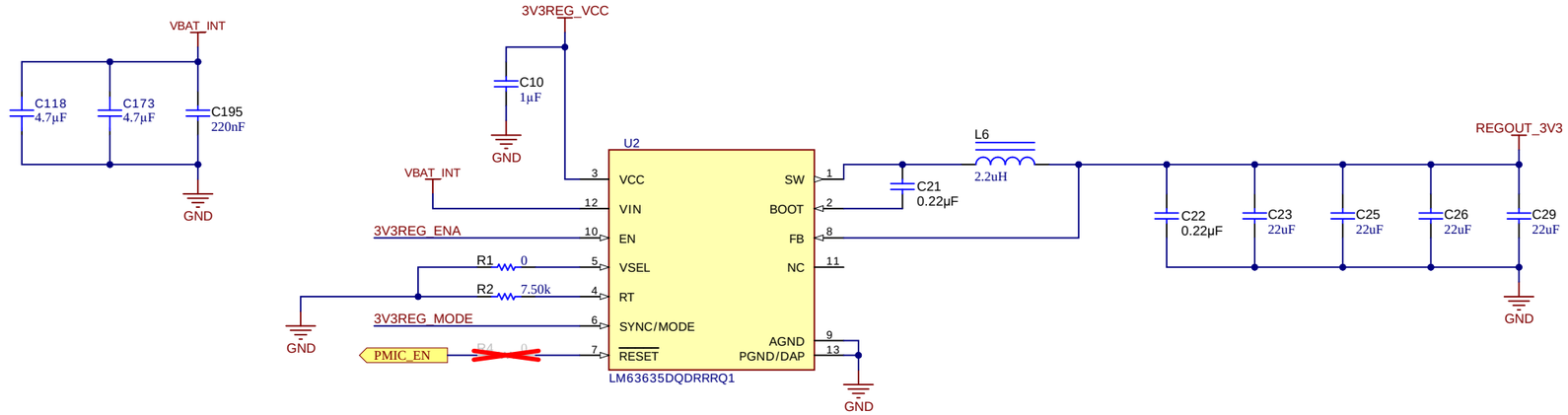
http://www.ti.com

3V3 SUPPLY REFERENCE

References

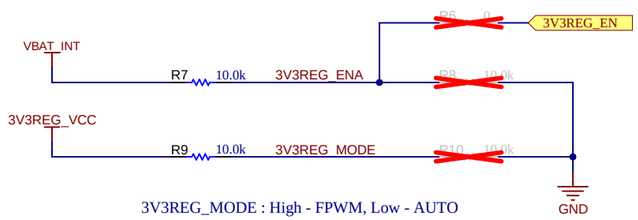


Switching Frequency : 2.1 MHz

Mode : Forced PWM

Output Voltage : Fixed 3.3

Output current limit : 3.25A



3V3REG_MODE : High - FPWM, Low - AUTO

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Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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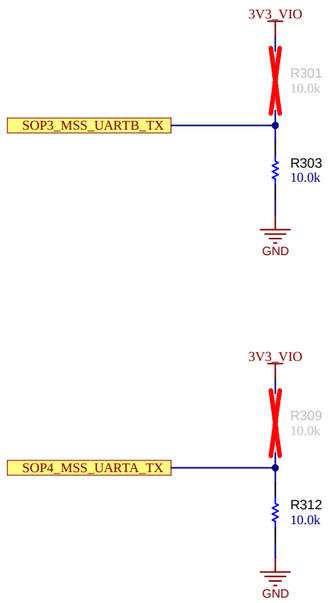
SOP REFERENCE

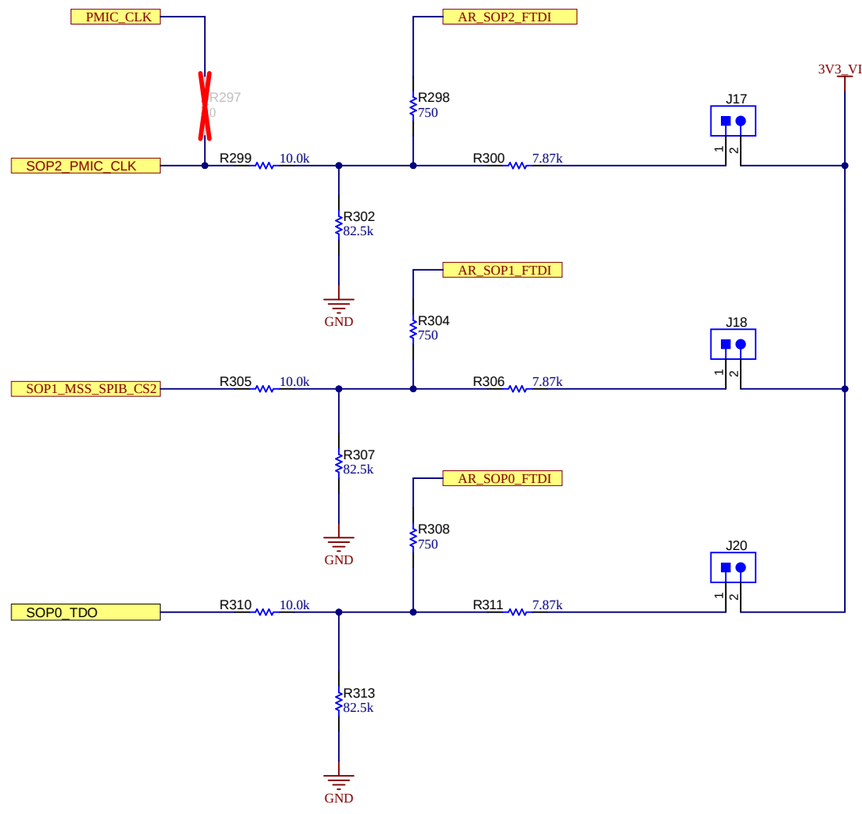
XTAL DETECT SOP CONFIG

	SOP4, SOP3
40 MHz	00
45.1584 MHz	01
49.152 MHz	10
50 MHz	11

SOP2, SOP1, SOP0

SOP_MODE1	SCAN/ATPG	010
SOP_MODE2	DEV/FLED/ORBIT	011
SOP_MODE3	THB	000
SOP_MODE4	FUNC	001
SOP_MODE5	DEV MANAGEMENT	101





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Drawn By:	File: PROC113D_SOP_Reference.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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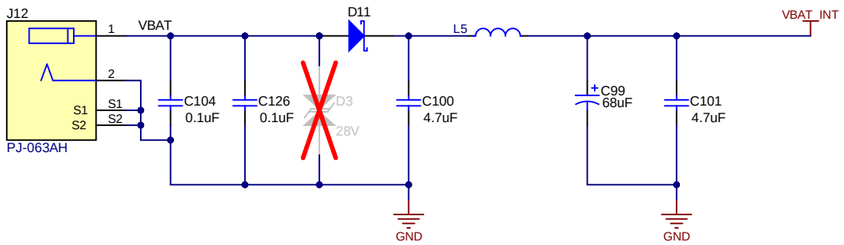
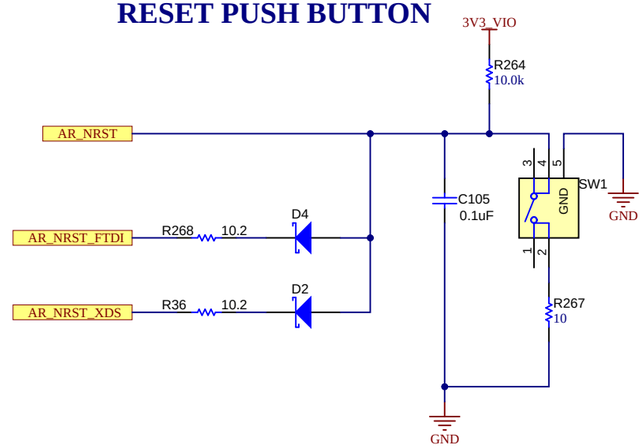
POWER IN, RESETS, AND LEDS

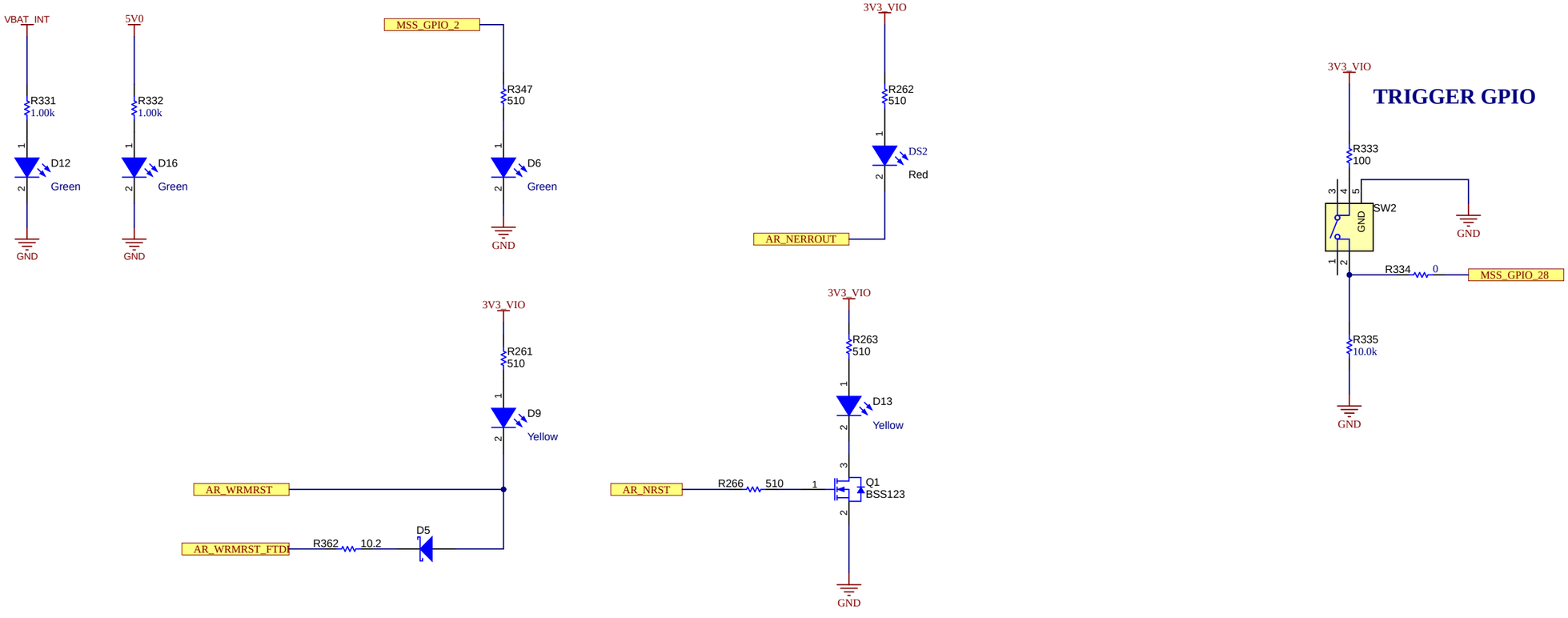
POWER JACK



RESET PUSH BUTTON



INDICATION LEDS



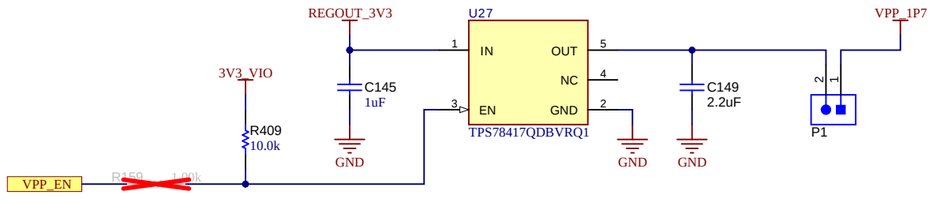
TRIGGER GPIO

Orderable: xWR2944EVM	Designed for: Public Release	Mod. Date: 1/17/2023
TID #: N/A	Project Title: xWR2944EVM	
Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 9 of 25
Drawn By:	File: PROC113D_PWR_RST_LED.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

TEXAS INSTRUMENTS
http://www.ti.com

References

VPP LDO



Orderable: xWR2944EVM	Designed for: Public Release	Mod. Date: 1/17/2023
TID #: N/A	Project Title: xWR2944EVM	
Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 10 of 25
Drawn By:	File: PROC113D_VPP_LDO.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

TEXAS INSTRUMENTS
http://www.ti.com

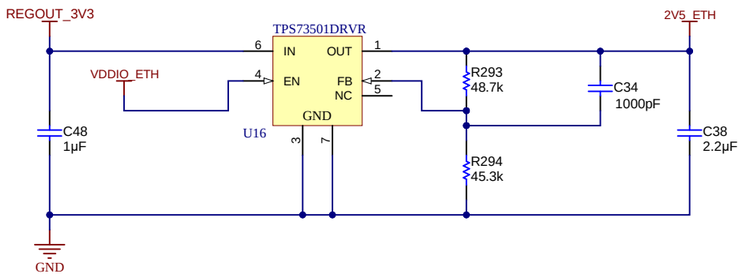
ETHERNET POWER

References

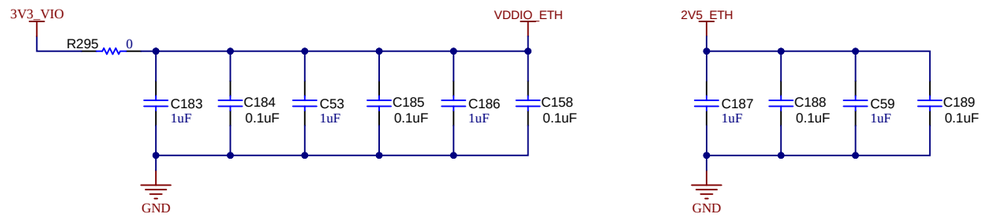
[TPS73501 Datasheet]

[TLV733P Datasheet]

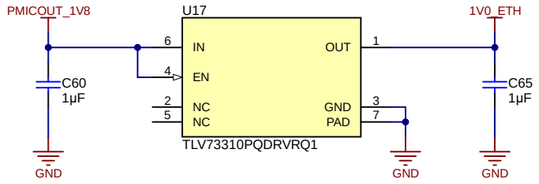
2.5V ANALOG SUPPLY

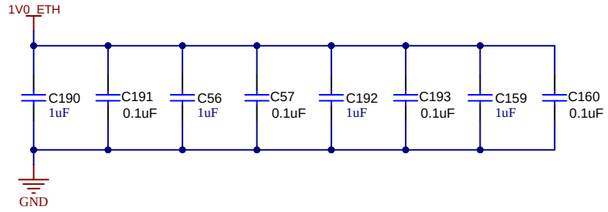


DECOUPLING CAPS



1V ANALOG SUPPLY





Orderable: xWR2944EVM	Designed for: Public Release	Mod. Date: 1/17/2023
TID #: N/A	Project Title: xWR2944EVM	
Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 11 of 25
Drawn By:	File: PROC113D_Ethernet_PWR.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

TEXAS INSTRUMENTS
http://www.ti.com

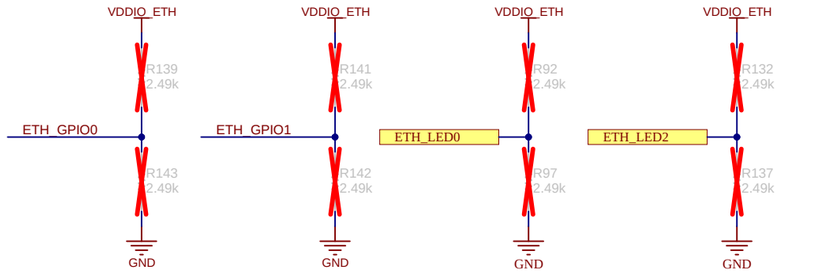
ETHERNET PHY

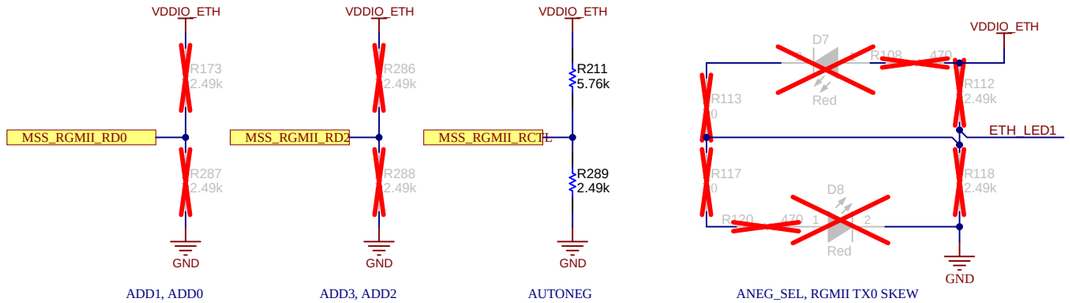
References

DP83867E Datasheet

BOOTSTRAP CONFIGURATION PINS

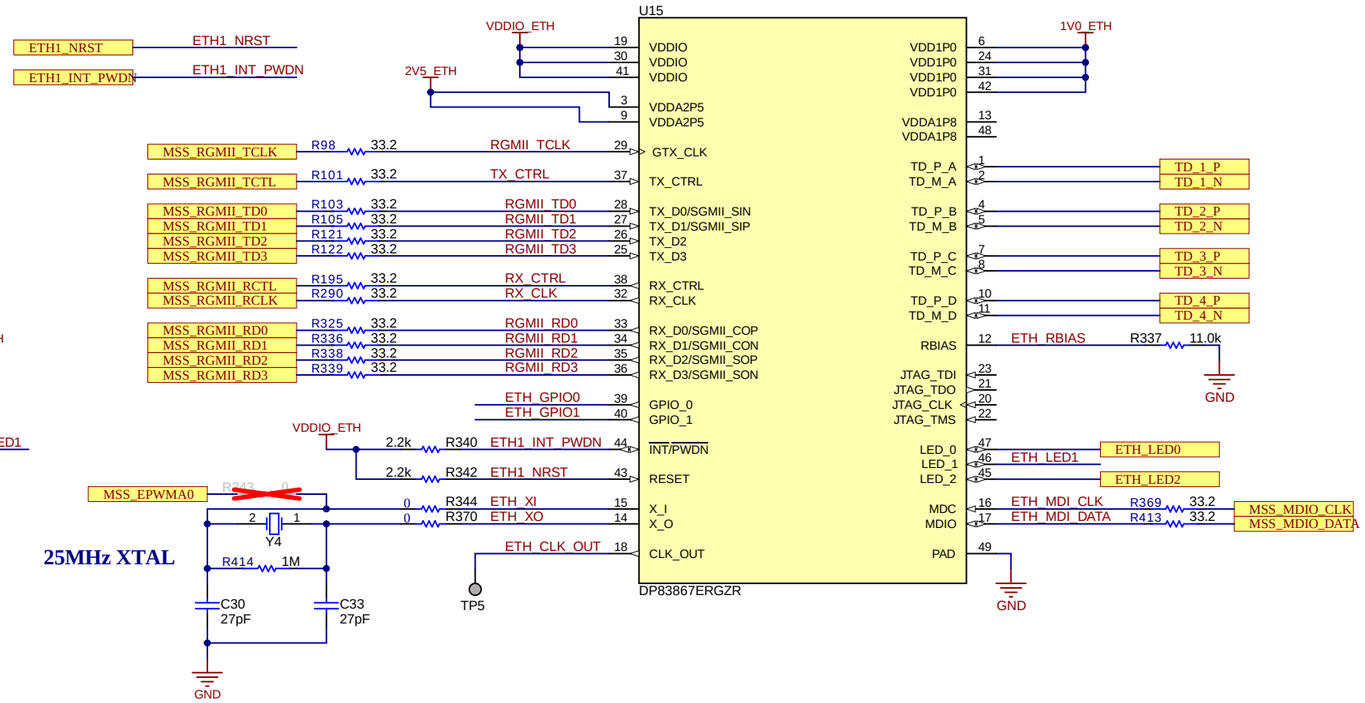
Resistor Values must be changed to change Modes, refer to datasheet for proper values





DEFAULT CONFIGURATION:
ADD1, ADD0 = 0
ADD3, ADD2 = 0
AUTONEG = 1
RGMII RX0 SKEW = 0
RGMII RX2, RX1 SKEW = 0, 0
RGMII TX1, TX0 SKEW = 0, 0
ANEG_SEL, RGMII TX0 SKEW = 0, 0
MIRROR ENABLE, SGMII ENABLE = 0, 0

ETHERNET PHY



Place R98, R101, R103, R105, R121 and R122 close to U29

Place R195, R290, R325, R336, R338 and R339 close to U15

Orderable: xWR2944EVM		Designed for: Public Release	Mod. Date: 1/17/2023
TID #: N/A		Project Title: xWR2944EVM	
Number: PROC113	Rev: D	Sheet Title:	
SVN Rev: Not in version control		Assembly Variant: 001	Sheet: 12 of 25
Drawn By:		File: PROC113D_Ethernet_PHY.SchDoc	Size: B
Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

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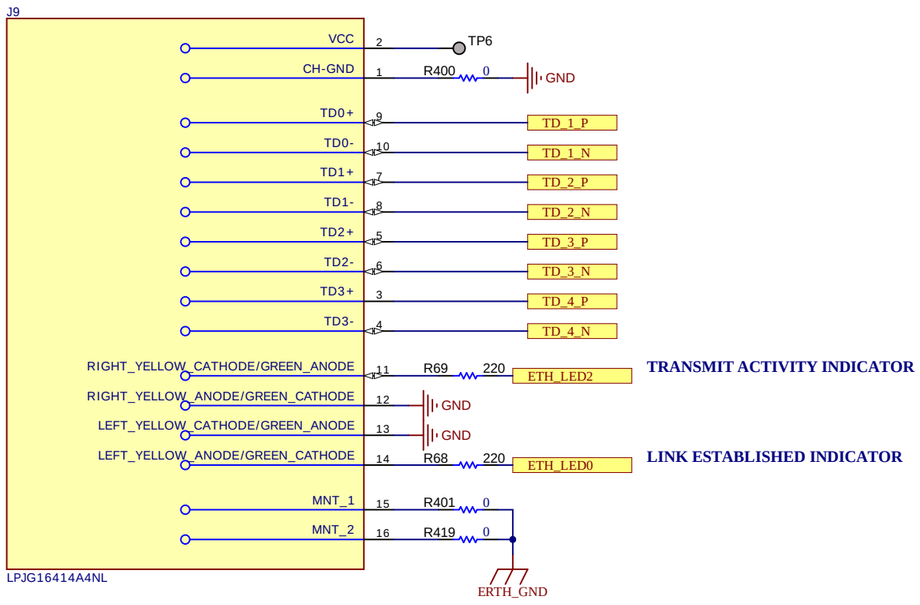
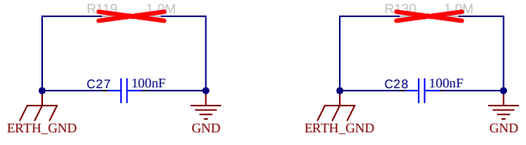
ETHERNET MAGNETICS

RJ45 WITH MAGJACK

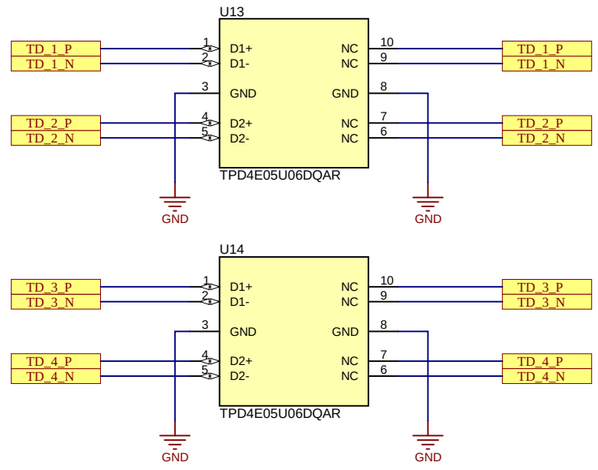


TRANSMIT ACTIVITY INDICATOR

LINK ESTABLISHED INDICATOR



ETHERNET ESD PROTECTION



Orderable: xWR2944EVM	Designed for: Public Release	Mod. Date: 1/17/2023
TID #: N/A	Project Title: xWR2944EVM	
Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 13 of 25
Drawn By:	File: PROC113D_Ethernet_Magnetics.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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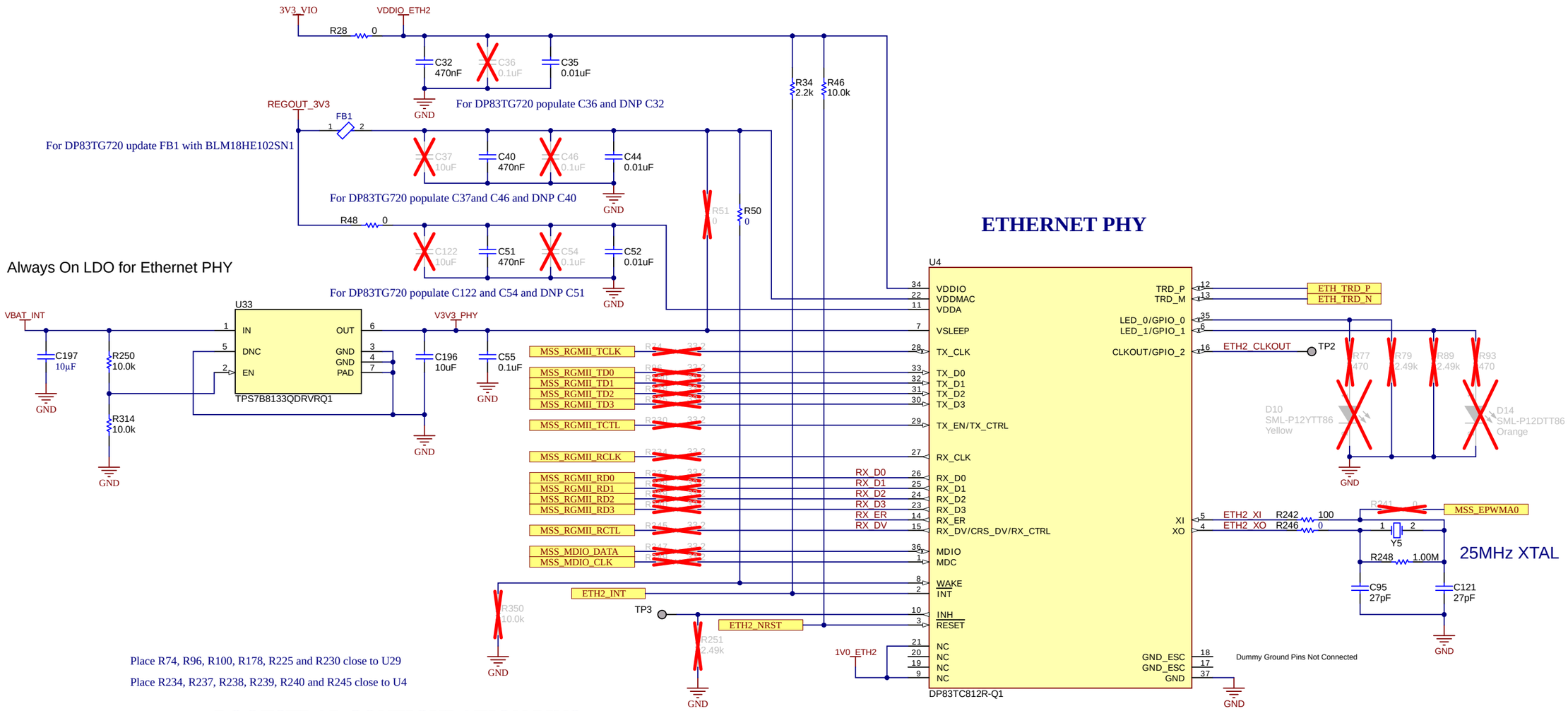
http://www.ti.com

ETHERNET

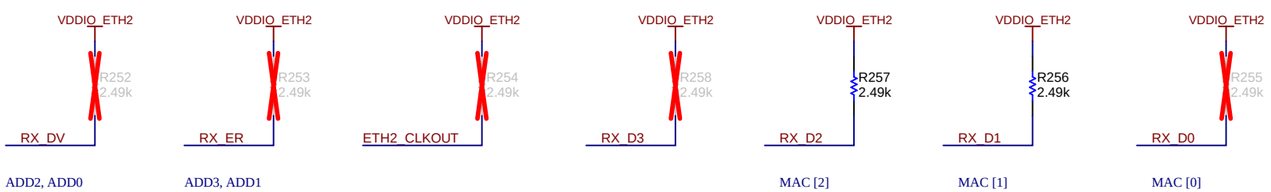


Place R74, R96, R100, R178, R225 and R230 close to U29

Place R234, R237, R238, R239, R240 and R245 close to U4

BOOTSTRAP CONFIGURATION PINS

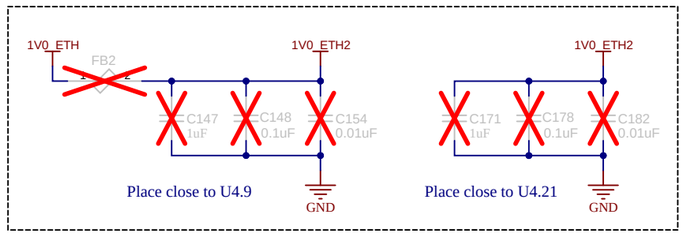
Resistor Values must be changed to change Modes, refer to datasheet for proper values



MAC Interface Selection Bootstraps

MAC[2:0] - 1 1 0 RGMII (TX and RX Internal Delay Mode)

Provision for DP83TG720



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TID #: N/A		Project Title: xWR2944EVM	
Number: PROC113	Rev: D	Sheet Title:	
SVN Rev: Not in version control		Assembly Variant: 001	Sheet: 14 of 25
Drawn By:		File: PROC113D_Auto_Ethernet_PHY.SchDoc	Size: B
Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

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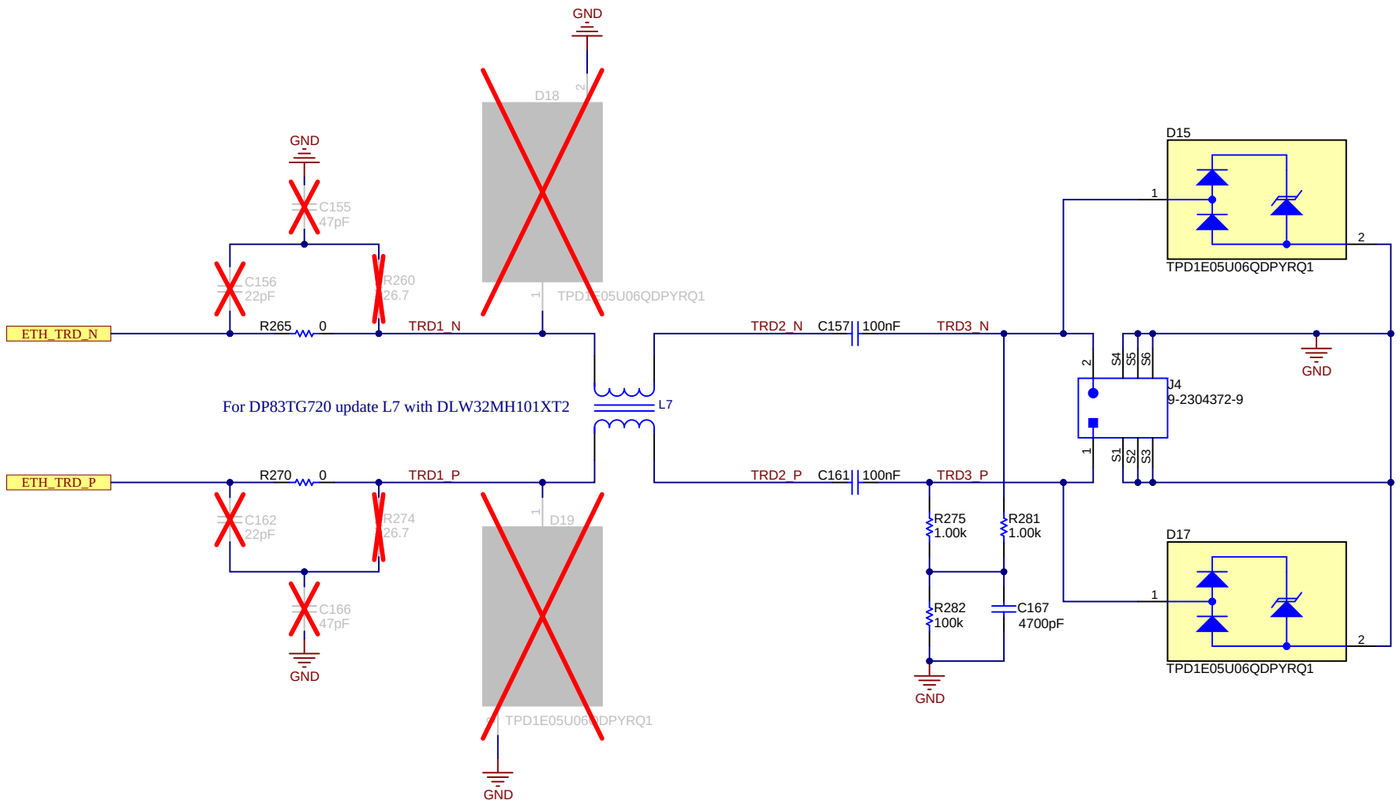
ETHERNET CONNECTOR



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Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 15 of 25
Drawn By:	File: PROC113D_Auto_Ethernet_conn.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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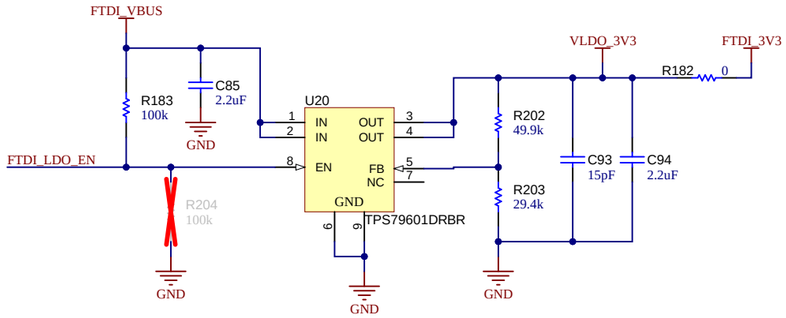
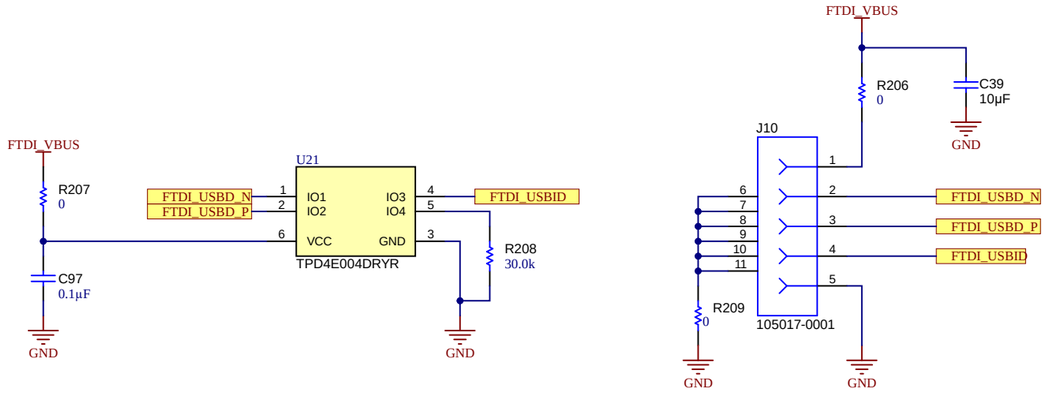
FTDI (1/2)

3.3V LDO FOR FTDI



FTDI USB PORT



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TID #: N/A	Project Title: xWR2944EVM	
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SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 16 of 25
Drawn By:	File: PROC113D_FTDI_PWR.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

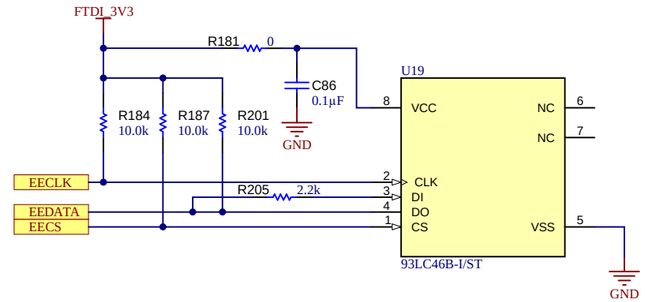
TEXAS INSTRUMENTS
http://www.ti.com

FTDI (2/2)

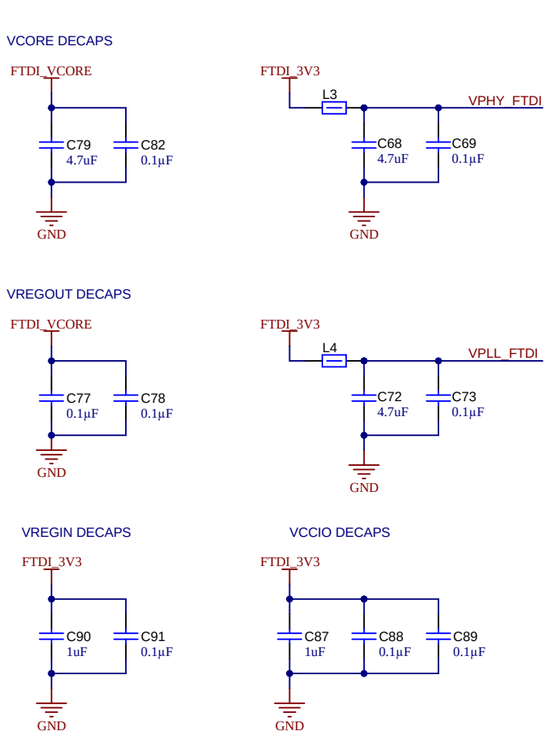
References

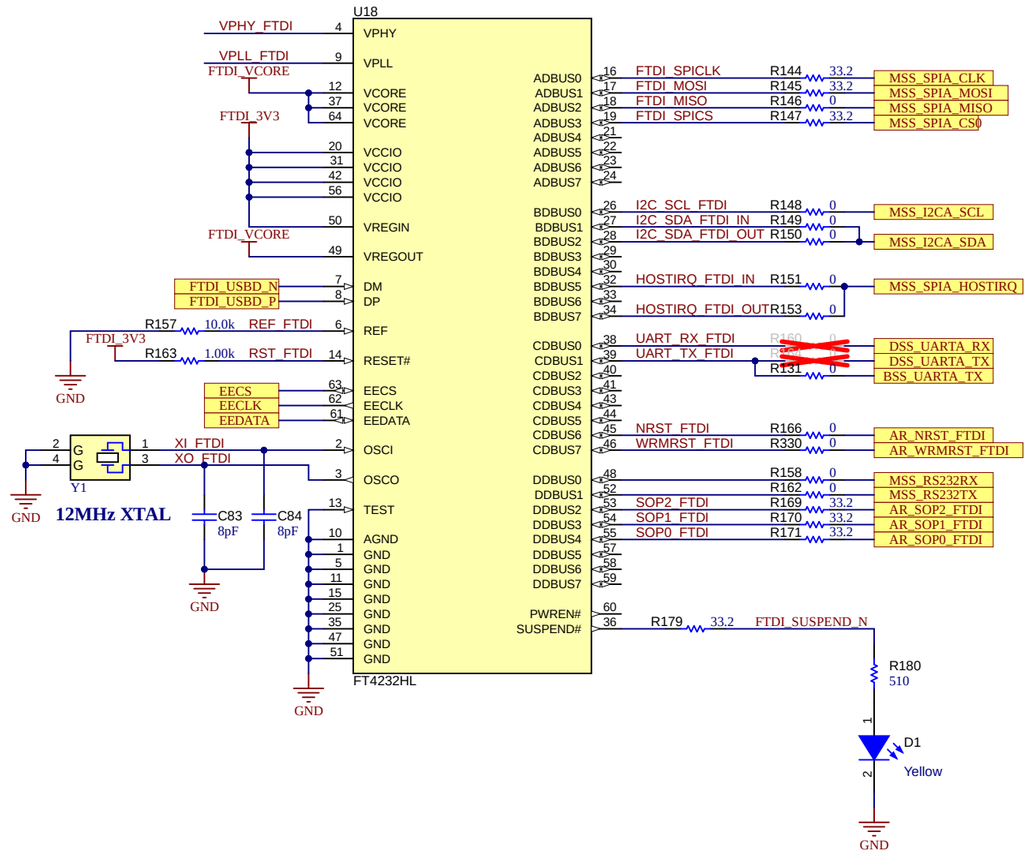
FT4232H Datasheet

FTDI EEPROM



FTDI SUPPLY DECAPS





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Number: PROC113	Rev: D	Sheet Title:	
SVN Rev: Not in version control		Assembly Variant: 001	Sheet: 17 of 25
Drawn By:		File: PROC113D_FTDI.SchDoc	Size: B
Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

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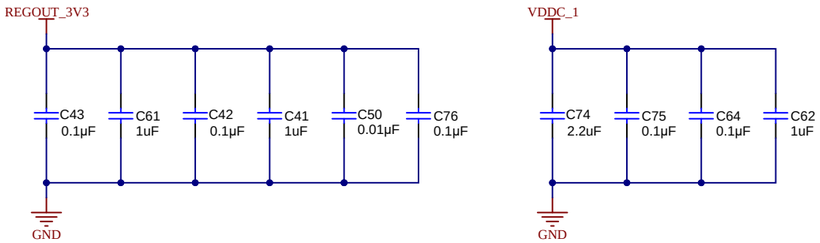
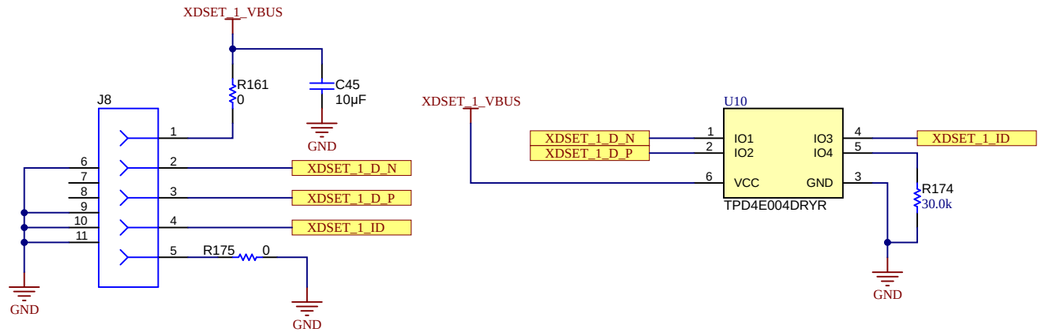
XDS110(1/2)

XDS110 DECOUPLING CAPS



XDS110 USB PORT



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Number: PROC113	Rev: D	Sheet Title:	
SVN Rev: Not in version control		Assembly Variant: 001	Sheet: 18 of 25
Drawn By:		File: PROC113D_XDS110 Interface_1A.SchDoc	Size: B
Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

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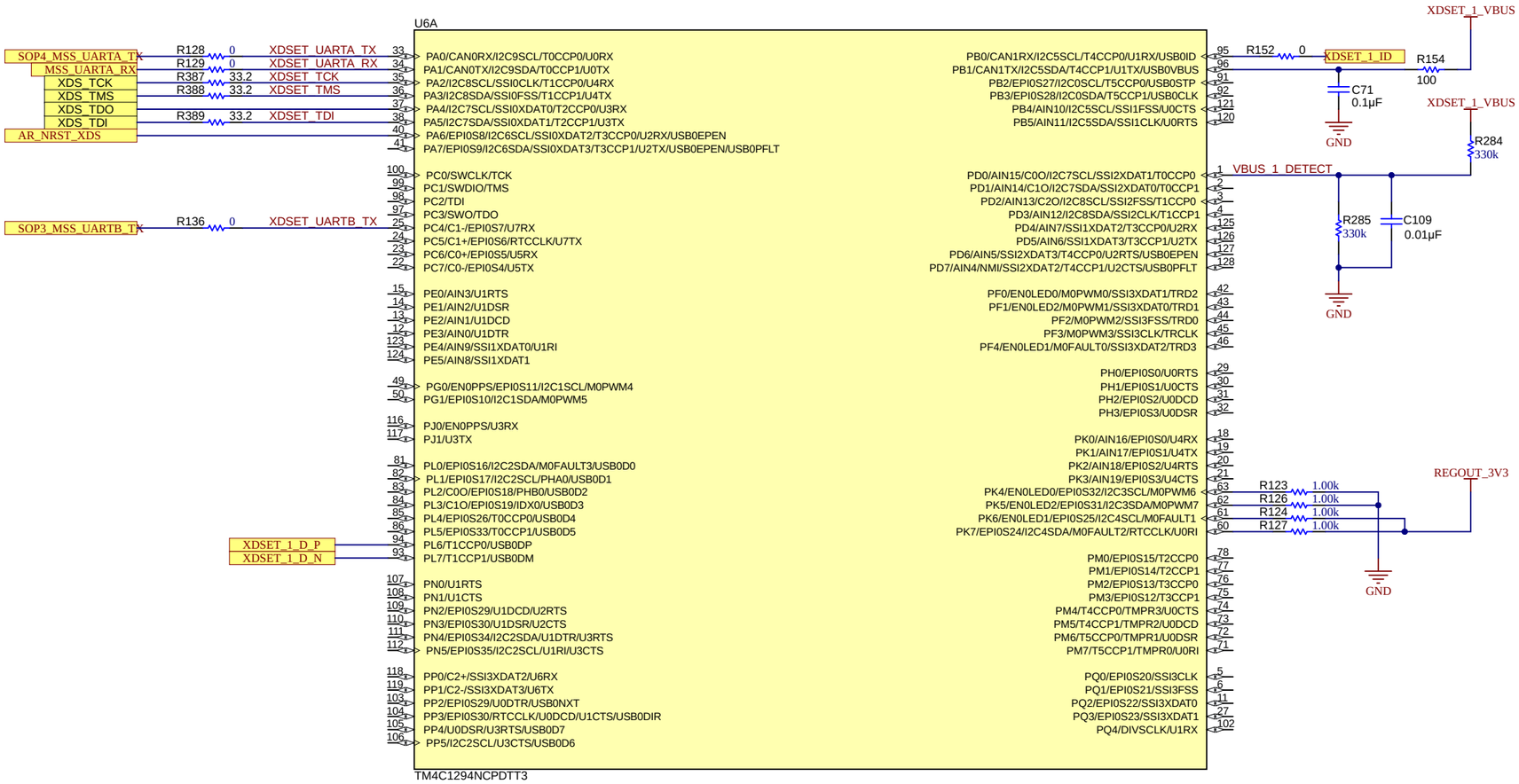
http://www.ti.com

References

[TM4C1294NCPDT Datasheet]

XDS110(2/2)



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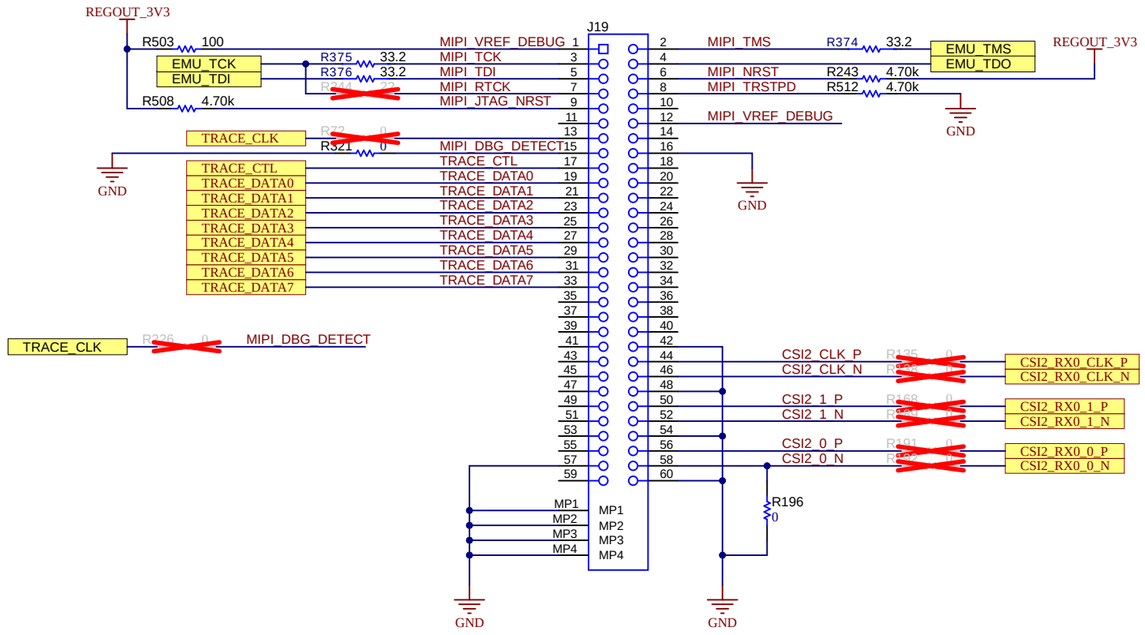
SVN Rev: Not in version control		Assembly Variant: 001	Sheet: 19 of 25
Drawn By:		File: PROC113D_XDS110 Interface_1B.SchDoc	Size: B
Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

MIPI 60 PIN HEADER

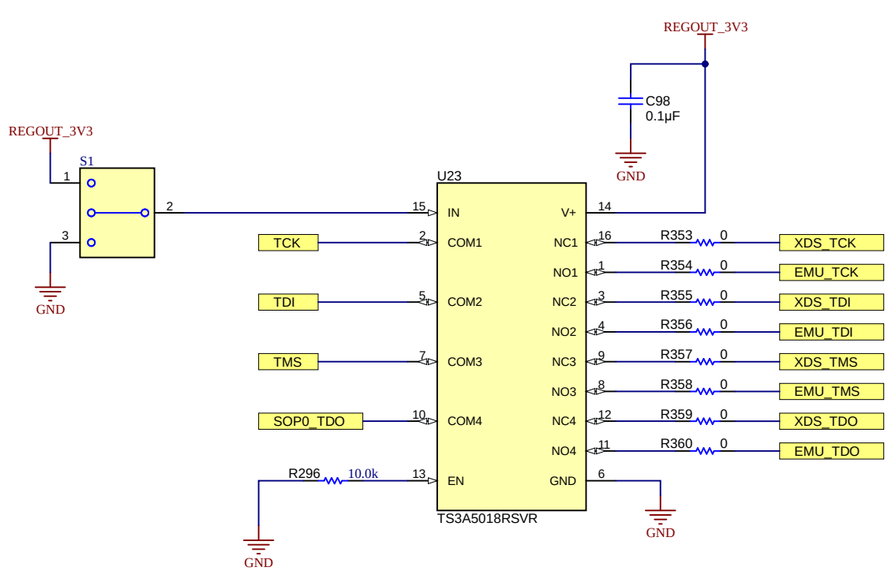
References

EMULATION AND TRACE HEADERS
XDS560v2 EMULATOR

NOTE: DEFAULT CONFIGURATION IS FOR MIPI 60 PIN EMULATOR



JTAG MUX BETWEEN XDS110 AND MIPI 60 PIN



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TID #: N/A	Project Title: xWR2944EVM	
Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 20 of 25
Drawn By:	File: PROC113D_JTAG_EMU_Connector.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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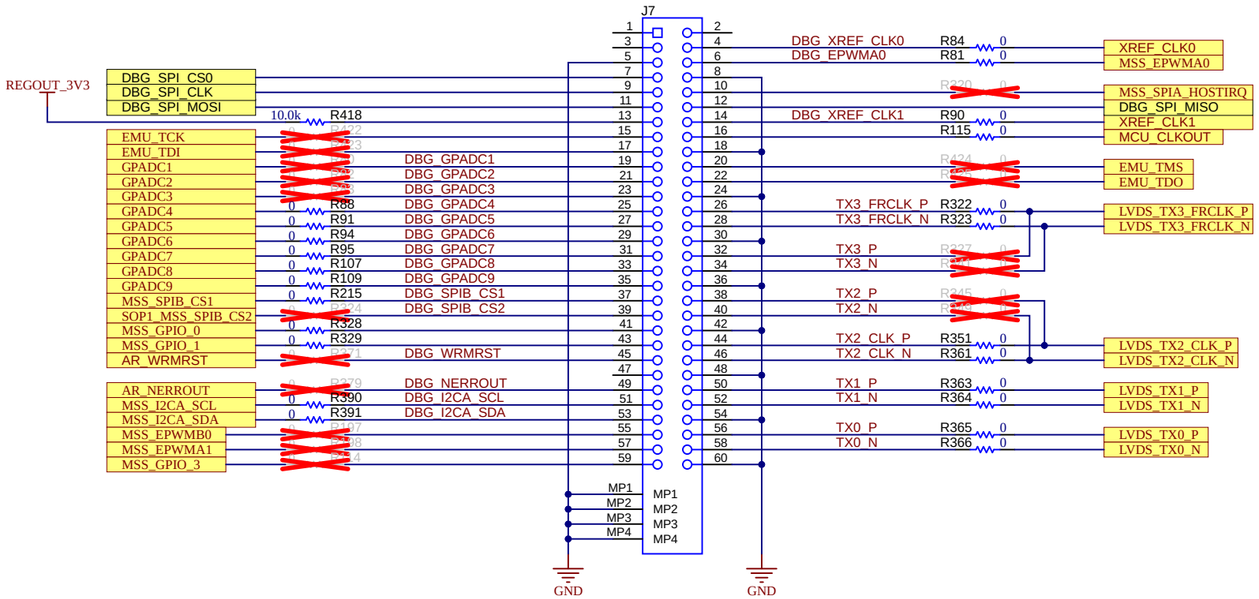
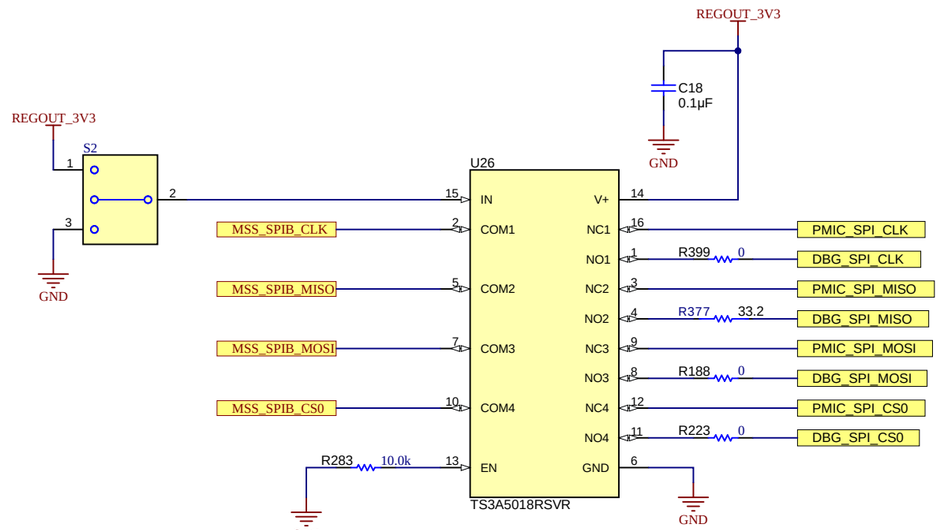
http://www.ti.com

60 PIN DEBUG CONNECTOR



SPI MUX BETWEEN PMIC AND 60 PIN DEBUG CONNECTOR



PLACE DBG SERIES RESISTORS NEAR 60 PIN CONNECTOR

Orderable: xWR2944EVM		Designed for: Public Release	Mod. Date: 1/17/2023
TID #: N/A		Project Title: xWR2944EVM	
Number: PROC113	Rev: D	Sheet Title:	
SVN Rev: Not in version control		Assembly Variant: 001	Sheet: 21 of 25
Drawn By:		File: PROC113D_Debug_Connector.SchDoc	Size: B
Engineer: Adrian Ozer		Contact: http://www.ti.com/support	

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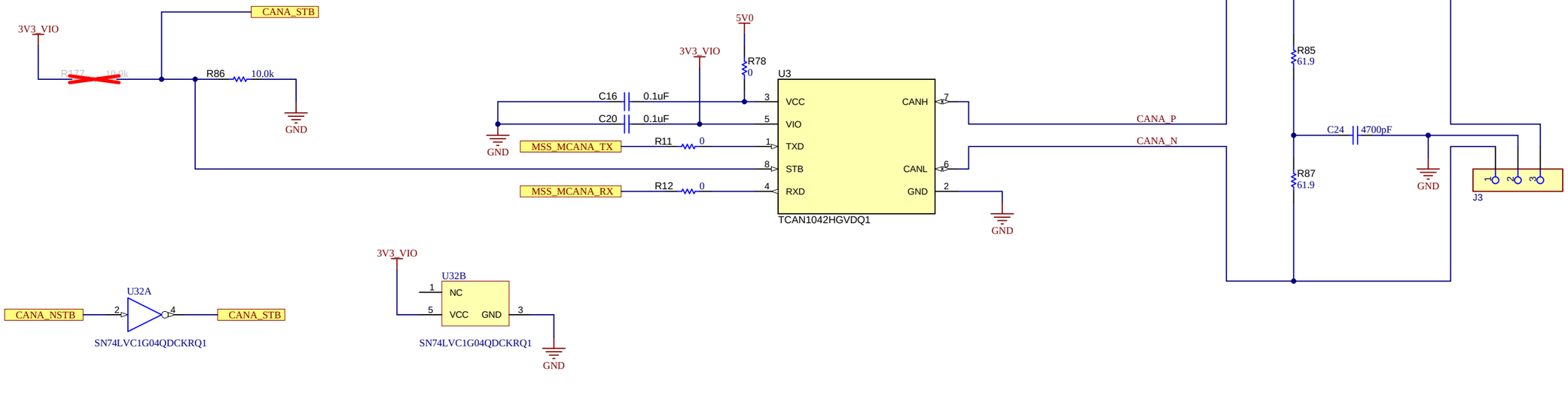
CAN INTERFACE

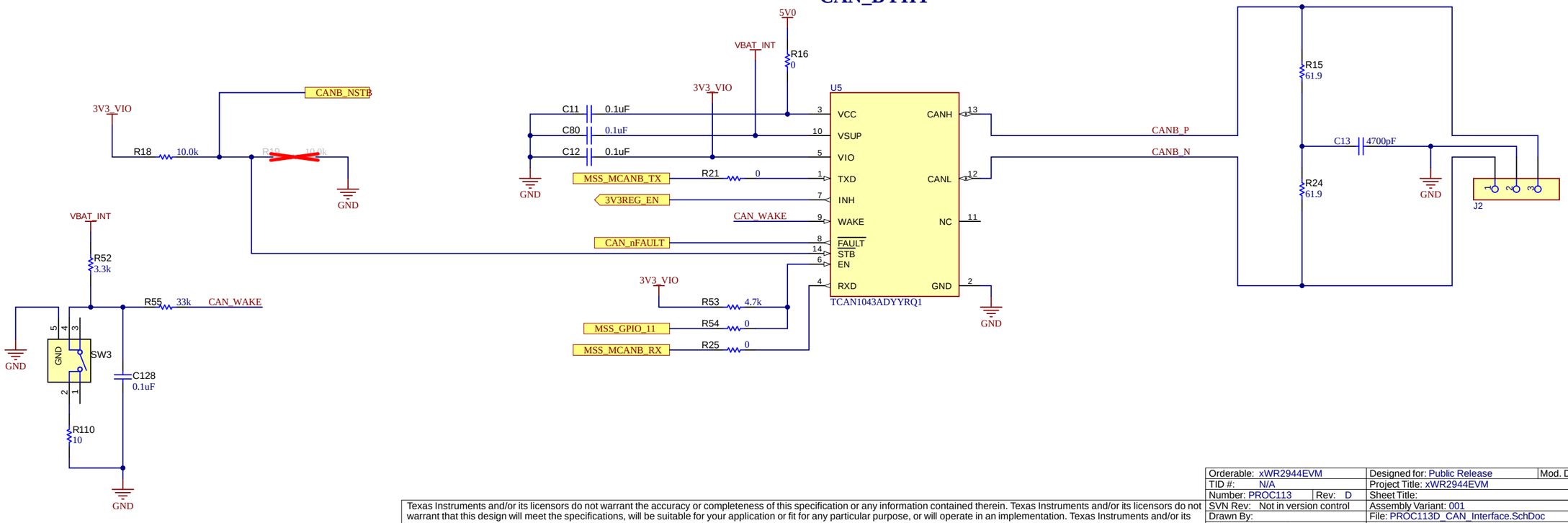
References

TCAN1042 Datasheet

CAN_A PHY



CAN_B PHY



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SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 22 of 25
Drawn By:	File: PROC113D_CAN_Interface.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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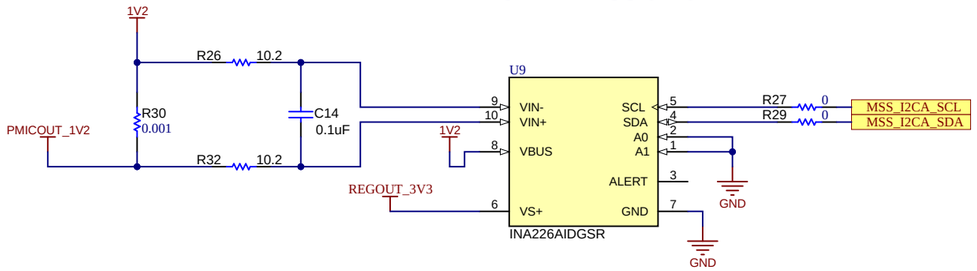
CURRENT SENSORS

References

INA226 Datasheet

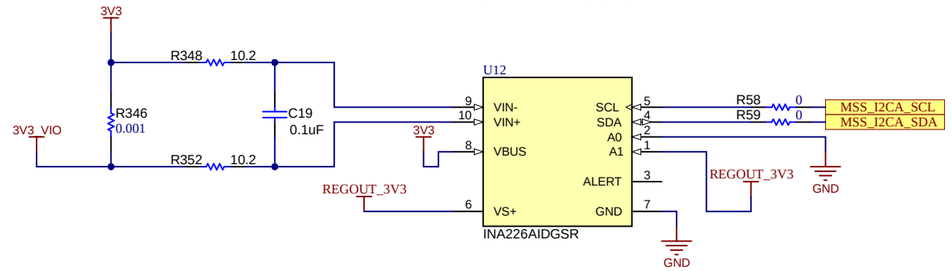
1.2V SUPPLY CURRENT SENSOR

I2C ADDRESS 0x40



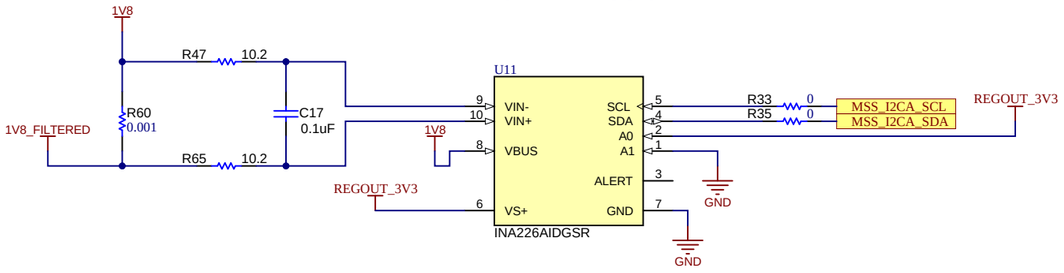
3.3V SUPPLY CURRENT SENSOR

I2C ADDRESS 0x44



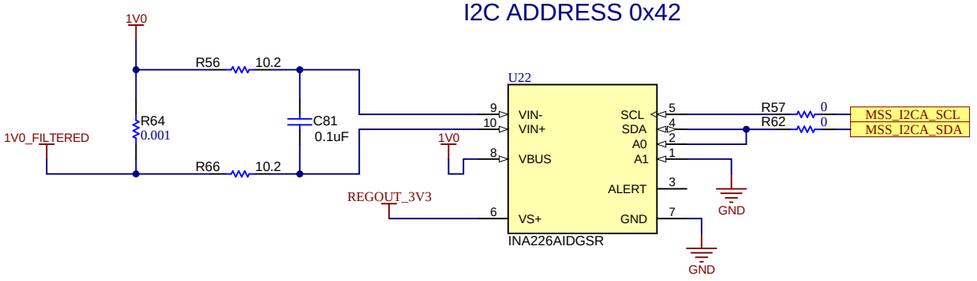
1.8V SUPPLY CURRENT SENSOR

I2C ADDRESS 0x41



1.0V SUPPLY CURRENT SENSOR

I2C ADDRESS 0x42



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Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 23 of 25
Drawn By:	File: PROC113D_Current_Sensors.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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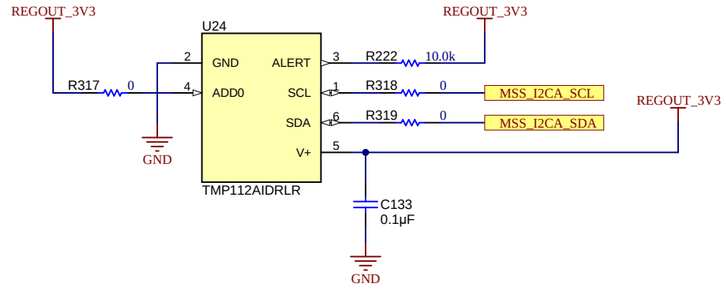
TEMP SENSOR

References

TMP112 Datasheet

I2C ADDRESS 0x49



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Number: PROC113 Rev: D	Sheet Title:	
SVN Rev: Not in version control	Assembly Variant: 001	Sheet: 24 of 25
Drawn By:	File: PROC113D_Temp_Sensor.SchDoc	Size: B
Engineer: Adrian Ozer	Contact: http://www.ti.com/support	

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FID1 FID2 FID3 FID4 FID5 FID6 FID7 FID8 FID9 FID10 FID11 FID12 FID13 FID14 FID15 FID16

PCB Number: PROC113
PCB Rev: D

PCB LOGO
Texas Instruments

PCB LOGO
FCC disclaimer

PCB LOGO
WEEE logo

PCB LOGO
ESD Susceptible

CAUTION HOT SURFACE

LOGO2

CE Mark

Variant/Label Table	
Variant	Label Text
001	xWR2944EVM

LBL1
PCB Label
THT-14-423-10
Size: 0.65" x 0.20 "

ZZ1
Label Assembly Note
This Assembly Note is for PCB labels only

ZZ2
Assembly Note
These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ3
Assembly Note
These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ4
Assembly Note
These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

Orderable: xWR2944EVM		Designed for: Public Release	Mod. Date: 1/17/2023
TID #: N/A		Project Title: xWR2944EVM	
Number: PROC113	Rev: D	Sheet Title:	
SVN Rev: Not in version control		Assembly Variant: 001	Sheet: 25 of 25
Drawn By:		File: PROC113D_Hardware.SchDoc	Size: B
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